REMARKS

Applicants have received and carefully reviewed the Final Office Action mailed January 18, 2005. Claims 1-62 are pending, with claims 8, 10, 12, 17, 20-28, 36, 41, 44-52 and 54-62 withdrawn from consideration due to restriction. Reconsideration and reexamination are respectfully requested.

As a preliminary matter, the cover sheet for the Office Action indicates that the Office Action is non-final, as box 2B is checked. However, the remarks contradict this indication. Applicants are uncertain which of the two is correct. In light thereof, Applicants are submitting these remarks within two months of the mailing of the Office Action, leaving it to the Examiner to determine whether the Office Action was indeed made final.

Claims 1-7, 9, 11, 13-16, 18, 19, 29-35, 37-40, 42, 43 and 53 were rejected under 35 U.S.C. §103(a) as being unpatentable over Dewey, Jr. (U.S. Patent No. 3,950,101) in view of Stafford (U.S. Patent No. 5,504,575), Kumar (U.S. 2003/0034281 A1) and Jorgensen et al. (U.S. Patent No. 5,835,645). After careful review of the cited references, Applicants respectfully disagree.

As a preliminary matter, Applicants would like to clarify earlier remarks and respond to the Examiner's response to arguments. The Examiner appears to be stating that Dewey, Jr. suggests a narrow bandpass filter, and that this means more than one frequency passes through the filter. Applicants quite certainly agree; any filtering element may be characterized by how sharply its attenuation profile rises and falls around a pass band. Applicants' claims recite that the filter has multiple bandpass regions. As such, Applicants' claimed filter should not be misunderstood as having bandpass regions each passing only a single frequency, as such a specific and highly tailored filter (if such is literally possible) is not a required element. For the present action, however, Applicants believe that other portions of the claimed invention are suited for discussion. It is believed to be sufficient to note that a bandpass filter allows at least a band of frequencies of light to pass therethrough while attenuating at least some other frequencies.

More specifically, the present invention, as embodied in claim 1, recites not only the above noted filter, but also an optical encoder. The encoder allows selection of desired combinations of wavelength bands to pass through to the sample. As pointed out in the previous Response, the suggested combination of an encoder in conjunction with the filter of Dewey, Jr.,

would have no motivation. Specifically, the filter element suggested in Dewey, Jr., is disposed with respect to the light source such that only one frequency band passes at a time. An encoder, however, is used when there are a plurality of combinations of frequency bands available for illuminating a target. As shown throughout the Applicants' disclosure, the claimed invention separates out these two functions by using two separate elements to perform them. Specifically, in claim 1, an optical filter having a plurality of bandpass regions is used to provide a number of available narrowband optical signals, and the encoder is used to select subsets (individual or combinations) of the available narrow bands.

Dewey, Jr., addresses the possibility of additional frequencies being desirable by providing, in the embodiment shown in Figure 6, a "neutral reference filter" 19 along with ethane filter 15 and methane filter 16. Indeed, rather than providing an optical filter to provide a number of available narrowband optical signals simultaneously, and using an encoder to select from among the available narrowband optical signals, Dewey, Jr., instead adjusts filter position or adds separately placed filters that are moveable into and out of the light path in order to achieve a spectrometer capable of interrogating a sample at a number of different, selectable frequencies.

In light of the above, it appears that there would be no motivation to add an encoder to the system provided by Dewey, Jr.

The Examiner suggests that a narrow band of frequencies passed by Dewey, Jr., may still be passed through an encoder, with the motivation being to at least optimize the performance of the spectrometer system. It is entirely unclear how the addition of an encoder to the system of Dewey, Jr., would optimize a system that passes through light at three narrow bands having 1.5% half power height (Dewey, Jr., at column 5, lines 56-57). To "optimize" a system, the optimization must occur in light of some factor that will be optimized.

For example, given the preferred narrow bands suggested by Dewey, there would be a filter having a central wavelength of 6.83μ with a half-power bandwidth of two percent (Dewey, Jr., at column 3, lines 53-61). This yields a half power band from 6693 nm to 6967 nm. This beam, according to the Examiner's suggested substitution, would then be split into smaller bands which could then pass through an encoder for selection/deselection of certain wavelengths. However, given the narrow band (less than 300 nm wide), the ability to split the beam becomes a problem. If a prism is used, then the incident angle on the prism would have to be set to a large

angle (nearing critical angle) to create sufficient path difference for the incident light to allow selection/deselection of one band or another, since the variation of impedance within the narrow optical band would tend to be quite small. A sharp angle, of course, requires tight tolerances with respect to the stability of the device itself and the surface characteristics of the prism. Alternatively, a very large prism could be used and/or the encoder could be placed far from the prism, though either would create an unwieldy device.

It is readily apparent that the suggested substitution creates a number of design difficulties in addition to the lack of motivation for such a modification.

With respect to the addition of an integrator of Kumar, even the Examiner is uncertain whether there is a concrete reason for adding Kumar. The combination is suggested by the Examiner "for at least the purpose of gauging the reflectance of light in a narrow region from said mirrors in Dewey, Jr., thereby arguably optimizing the efficiency of said spectrometer system." How measurement of the reflectance of light in a narrow region from the mirrors in Dewey, Jr., will aid efficiency is entirely unclear. Applicants must point out that Kumar states:

> The integrating chamber 89 provides an even uniform distribution of the collected light to each of one or more spectral filters 90-96, preferably comprising a plurality of monochromater systems. In the embodiment of FIG. 8, each of the monochromaters 90-96 transmits a narrow band (approximately 0.05 to 0.1 nanometers) centered around a selected frequency to detector 90-104 which provides an analog signals to the control 30 corresponding to the intensity of the emission of the associated monochromater.

(Kumar at ¶62). Thus Kumar suggests the integrating chamber for combining received signals to provide them to a plurality of detectors.

In contrast, Dewey, Jr. does not appear to provide multiple detectors in connection with a single analyzer (38, 138), such that an integrating chamber is not needed to provide uniform distribution of signal prior to passing to the detectors; light is instead (as shown by Figure 5 of Dewey, Jr.) focused onto the detector.

Jorgenson et al. is apparently cited to provide certain structural features corresponding to above noted elements. However, selecting a specific structure for the filters or encoder does not change any of the above noted problems with the suggested combination.

In light of the above, it is apparent that the combination has been pieced together using Applicants' claims as a template. Specifically, there is neither motivation for combining Dewey,

Jr., with Stafford as suggested, nor motivation for combining Dewey, Jr., with Kumar, let alonE constructing a combination of all three plus an additional reference.

So long as Dewey, Jr., using separate analyzers and/or separate analysis steps to pass light through multiple filter elements rather than providing a plurality of frequency bands at once, is used as the basis for rejection, similar arguments will apply to show the combination is improper. To have encoder functionality, there must be a plurality of available, distinct, and separable light frequencies. Dewey, Jr., as set forth above, does not allow for an encoder; indeed, Dewey, Jr., obviates any need for an encoder by using multiple chambers and/or a moveable filter.

In light of the above, it is believed that a *prima facie* case of unpatentability has not been established. Applicants therefore believe that the cited combination cannot be relied upon to form the suggested rejection under 35 U.S.C. §103(a), and claims 1-7, 9, 11, 13-16, 18, 19, 29-35, 37-40, 42, 43 and 53 are patentable thereover.

In light of the above comments, claims 1 and 29 are believed to be in condition for allowance. Therefore, it is requested that withdrawn claims 8, 10, 12, 17, 20-28, 36, 41 and 44-52 also be considered and allowed in light of their dependence from allowable generic claims.

Reexamination and reconsideration are respectfully requested. It is respectfully submitted that all pending claims are now in condition for allowance. Issuance of a Notice of Allowance in due course is requested. If a telephone conference might be of assistance, please contact the undersigned attorney at (612) 677-9050.

Respectfully submitted,

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By their Attorney,

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